

The Road Trip

- 10) Jonathan and Johanna are taking a road trip across the country this summer and decide that in every town they stop in they will sample the local ice cream shops.
- 11) In the first town they stop at Mookies Ice Cream Mart. They figure out that you can make 465 different 2-scoop bowls of ice cream. How many different 2-scoop cones can you make? (Hint: If there were only one possible 2-scoop bowl, how many cones could you make?)
- 12) In the next town they stop at Chilly Ice Cream Parlor where you can make 220 different 3-scoop bowls of ice cream. How many different 3-scoop ice cream cones can you make?
- 13) At the third town they stop at the Tasty Ice Cream Shop where you can make 210 different 4-scoop bowls of ice cream. How many different 4-scoop ice cream cones can you make?
- 14) At Tom's Frozen Foods, you can make 3024 different 4-scoop ice cream cones. How many different 4-scoop bowls can you make. (Careful: this one reverses the situation.)
- 15) Next they stop at Spud's Finest where you can make 792 different 5-scoop bowls of ice cream. How many different 5-scoop ice cream cones can you make?
- 16) Lastly they stopped at Ice Cream by Midge, where you can make 55440 different 5-scoop ice cream cones. How many different 5-scoop bowls can you make. (Careful: this one reverses the situation.)
- 17) In general how could you find the number of different cones of a particular size if you knew the number of bowl combinations?
- 18) In general how could you find the number of different bowls of a particular size if you knew the number of cone permutations?

NAME: _____

42.S.11: Count the number of possible combinations (nCr) of n items taken r at a time

1. 080527a, P.I. A2.S.11
The expression ${}_9C_2$ is equivalent to
[A] ${}_9P_2$ [B] ${}_9C_7$ [C] ${}_9P_7$ [D] $\frac{9!}{2!}$
2. 080720a, P.I. A2.S.11
The expression ${}_8C_3$ is equivalent to
[A] ${}_8P_3$ [B] ${}_8C_5$ [C] $\frac{8!}{3!}$ [D] ${}_8P_5$
3. 010424a, P.I. A2.S.11
Five people have volunteered to work on an awards dinner at Madison High School. How many different committees of four can be formed from the five people?
[A] 5 [B] 20 [C] 10 [D] 1
4. 010515a, P.I. A2.S.11
How many different three-member teams can be selected from a group of seven students?
[A] 210 [B] 35 [C] 1 [D] 5,040
5. 010729a, P.I. A2.S.11
If the Math Olympiad Club consists of eighteen students, how many different teams of four students can be formed for competitions?
[A] 72 [B] 73,440 [C] 3,060 [D] 66
6. 069907a, P.I. A2.S.11
How many different three-member teams can be formed from six students?
[A] 120 [B] 720 [C] 216 [D] 20
7. 060320a, P.I. A2.S.11
How many different five-member teams can be made from a group of eight students, if each student has an equal chance of being chosen?
[A] 40 [B] 336 [C] 56 [D] 6,720
8. 080626a, P.I. A2.S.11
In the next Olympics, the United States can enter four athletes in the diving competition. How many different teams of four divers can be selected from a group of nine divers?
[A] 36 [B] 126 [C] 3,024 [D] 6,561
9. 080025a, P.I. A2.S.11
Alan, Becky, Jesus, and Mariah are four students in the chess club. If two of these students will be selected to represent the school at a national convention, how many combinations of two students are possible?
10. 060534a, P.I. A2.S.11
An algebra class of 21 students must send 5 students to meet with the principal. How many different groups of 5 students could be formed from this class?
11. 060114a, P.I. A2.S.11
If there are four teams in a league, how many games will have to be played so that each team plays every other team once?
[A] 3 [B] 8 [C] 6 [D] 16
12. 060632a, P.I. A2.S.11
Five friends met for lunch, and they all shook hands. Each person shook the other person's right hand only once. What was the total number of handshakes?
13. 080126a, P.I. A2.S.11
Megan decides to go out to eat. The menu at the restaurant has four appetizers, three soups, seven entrees, and five desserts. If Megan decides to order an appetizer or a soup, and one entree, and two different desserts, how many different choices can she make?
14. 080229a, P.I. A2.S.11
On a bookshelf, there are five different mystery books and six different biographies. How many different sets of four books can Emilio choose if two of the books must be mystery books and two of the books must be biographies?